

CLAIMS:

1. A metallic thin film chip producing apparatus, flattening a surface of a metallic thin film formed on a first insulating substrate,

    said metallic thin film chip producing apparatus comprising:

        a placement table on which a metallic thin film chip is placed;

        pressing means for causing a second insulating substrate to sandwich and press the metallic thin film of the metallic thin film chip, placed on the placement table, in a vertical direction with respect to the surface of the metallic thin film; and

        heating means for heating the metallic thin film of the metallic thin film chip placed on the placement table.

2. The metallic thin film chip producing apparatus as set forth in claim 1, wherein the heating means includes magnetic flux generation means for generating a magnetic flux penetrating the metallic thin film of the metallic thin film chip placed on the placement table, and the magnetic flux causes the metallic thin film to be heated.

3. The metallic thin film chip producing apparatus as set forth in claim 2, wherein the heating means is a high frequency heater which includes a coil serving as the magnetic flux generation means.

4. The metallic thin film producing apparatus as set forth in claim 1, wherein the heating means heats the metallic thin film of the metallic thin film chip by irradiation of a microwave.

5. The metallic thin film chip producing apparatus as set forth

in claim 4, wherein the heating means is a dielectric heater which includes microwave generation means for generating the microwave irradiated to the metallic thin film of the metallic thin film chip.

6. The metallic thin film chip producing apparatus as set forth in any one of claims 1 to 5, wherein each of the placement table and the pressing means is made of a material whose dielectric loss is small.

7. The metallic thin film chip producing apparatus as set forth in any one of claims 1 to 6 comprising a chamber for sealing up the metallic thin film chip placed on the placement table in vacuum or in an inert gas atmosphere.

8. The metallic thin film chip producing apparatus as set forth in any one of claims 1 to 6 comprising a chamber for shutting the metallic thin film chip placed on the placement table in a same atmosphere as a room air.

9. The metallic thin film chip producing apparatus as set forth in claim 1, 7, or 8 comprising fixation means for fixing the metallic thin film of the metallic thin film chip with the metallic thin film sandwiched by the second insulating substrate.

10. The metallic thin film chip producing apparatus as set forth in claim 4 or 5, wherein each of the placement table and the pressing means has a property which allows the microwave to pass therethrough.

11. The metallic thin film chip producing apparatus as set forth in any one of claims 1 to 10, wherein the metallic thin film is

made of gold.

12. The metallic thin film chip producing apparatus as set forth in any one of claims 1 to 11, wherein the second insulating substrate has a surface which is in contact with the metallic thin film so that roughness of the surface is 1 nm or less.

13. A metallic thin film chip producing method for flattening a surface of a metallic thin film formed on a first insulating substrate,

said method comprising the steps of:

(i) causing a second insulating substrate to sandwich and press the metallic thin film in a vertical direction with respect to the surface of the metallic thin film; and

(ii) heating the metallic thin film.

14. The metallic thin film producing method as set forth in claim 13, wherein magnetic flux generation means generates a magnetic flux penetrating the metallic thin film so as to heat the metallic thin film in the step (ii).

15. The metallic thin film producing method as set forth in claim 13, wherein microwave generation means irradiates a microwave to the metallic thin film so as to heat the metallic thin film in the step (ii).

16. The metallic thin film producing method as set forth in any one of claims 13 to 15, wherein the steps (i) and (ii) are carried out in vacuum or an inert gas atmosphere or in a same atmosphere as a room air.

17. The metallic thin film producing method as set forth in any

one of claims 13 to 16, wherein the metallic thin film is formed by deposition.